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**ELECTRO-OPTIC TECHNOLOGY DIVISION  
SPECIAL OPERATIONS & GROUND EO SYSTEMS BRANCH  
CODE JXQR**

**TEST REPORT FOR  
IMPROVED NIGHT/DAY FIRE CONTROL/OBSERVATION DEVICE  
(INOD) – BLOCK III**



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## 1.0 **General Information**

This document establishes the Test Report (TR) for the Developmental Testing (DT) of the Improved Night/Day Fire Control/Observation Device – Block III (INOD-BLK III), herein referred to as INOD. This TR contains the performance requirements, testing parameters and testing results for the evaluation of the Prototype systems against the Performance Specification (PS/11/JXQR/104; 18 January 2012). DT was conducted both by DRS personnel (with a Government witness) as well as NSWC Crane Electro-Optics Technology Division, JXQR Branch personnel.

### 1.1 **Purpose**

The purpose of this TR is to collect the DT data and results from the Prototype systems against the Performance Specification (PS/11/JXQR/104; 18 January 2012). This TR will be controlled as required by the current Electro-Optic Technology Division (EOTD) Quality Plan (PLN/00/JXQ/029).

### 1.2 **Security Classification**

This document does not use or generate classified information or material.

### 1.3 **Cancellation**

This approved document contains no prior cancellation(s).

### 1.4 **Scope**

The scope of this document is to provide a DT Test Report for the Improved Night/Day Fire Control/Observation Device – Block III (INOD-BLK III).

### 1.5 **References**

DOD Directive 5230.24	Distribution Statements on Technical Documents
PLN/00/JXQ/029	Electro-Optic Technology Division Quality Plan
DI/99/JXQ/001	Material Control Process for the Electro-Optic Technology Division (Building 3291)
DI/94/JXQ/001	Document Control Requirements and Standard Format for Preparation of Non-Ordnance Procedures and Instructions
NSWCCRANEINST 5100.1	Hazard Analysis for Hazardous Operations and Operational Risk Management (Chapter 4)
NSWCCRANEINST 5100.1	Occupational Health and Safety Program
NSWCCRANEINST 4855.1	NSWC Crane Instruction, Quality Management System
MIL-HANDBOOK-454	Standard General Requirements for Electronic Equipment
MIL-STD-130N	Identification Marking of U.S. Military Property (17 December 2007)
MIL-STD-1913	Dimensioning of Accessory Mounting Rail for Small Arms Weapons (20 April 2004)
CR-JXN-SWAF-P-0042	Standard Operating Procedure (SOP) for Special Weapons Assessment Facility (SWAF) (Outdoor Range)
INOD-BLK III CPD	Capabilities Production Document (CPD) for the Improved Night/Day Fire Control/Observation Device (INOD) Increment 3; 13 November 2013
PS/11/JXQR/104	Performance Specification for the Improved Night/Day Fire Control/Observation Device – Block III (INOD-BLK III)
ATP/12/JXQR/136	Acceptance Test Procedure (ATP) for Improved Night/Day Fire Control/Observation Device – Block IV (INOD-BLK IV); AN/PAS-31
PLN/13/JXQR/143	Test Plan and Limited User Assessment for Improved Night/Day Fire Control/Observation Device (INOD) – Block III

## 1.6 Background

This acquisition is designated an evolutionary acquisition utilizing a best value approach. This acquisition is a follow on to the original materiel solution for the Improved Night/Day Fire Control/Observation Device (INOD) (AN/PVS-19), the Universal Night Sight (AN/PVS-22) – INOD Block I, the Universal Night Sight – Long Range (AN/PVS-26) – INOD Block II, and the Thermal Long Range (AN/PAS-31) – INOD Block IV. The approach is to meet the requirements of the Capabilities Production Document (CPD) for the Improved Night/Day Fire Control/Observation Device (INOD) Increment 3 in achieving a true all weather, all-condition, low light/no light capability for Special Operations Forces (SOF) snipers. The INOD-Block III is to provide improved capability over the existing AN/PAS-31.

## 1.7 Hazard Briefing

All safety deficiencies will be immediately reported to your workplace supervisor in accordance with the Center NAVOSH Hazard Reporting Program, DD Form 2272. DD Form 2272 is required to be posted on all Official Bulletin Boards.

All work performed using this document shall be completed in accordance with references listed. In the event that certain conditions within this document are not addressed within the aforementioned reference documents, standard laboratory practices shall be applied.

Hazards for this operation are listed with consequences, triggering events, and mitigations in Table B-2. These hazards include:

- 1) Eye injury or serious skin burns from battery acid.
- 2) Damage to the INODs from battery acid.

## 1.8 Abbreviations and Acronyms

Table 1: Abbreviations and Acronyms

ATP	Acceptance Test Procedure	PLN	Test Plan
CPD	Capabilities Production Document	POA	Point of Aim
DI	Division Instruction	POI	Point of Impact
DoD	Department of Defense	PS	Performance Specification
DT	Developmental Testing	PSR	Precision Sniper Rifle
EOTD	Electro Optic Technology Division	QFP	Quality Focal Point
IAW	In Accordance With	TBD	To Be Determined
INOD	Improved Night/Day Fire Control/Observation Device	USSOCOM	United States Special Operations Command
OT&E	Operational Test & Evaluation	SOP	Standard Operating Procedure
MARS	Modular Accessory Rail System	SWAF	Special Weapons Assessment Facility
MIL-STD	Military Standard	TAS	Task Assignment Sheet
MRA	Mishap Risk Assessment	SOF	Special Operation Forces
NSWC	Naval Surface Warfare Center	EMI	Electromagnetic Interference
TR	Test Report	ARD	Anti-Reflection Device
LUA	Limited User Assessment	FOT&E	Follow-On Operational Test & Evaluation

## 2.0 Process Certification Requirements

Personnel performing the processes, procedures and testing as outlined in this TR shall be trained and qualified in accordance with (IAW) the DT of night vision/electro-optical equipment. Only personnel trained and qualified with NSWC Crane training policies are authorized to perform the DT of this TR.

## 3.0 Support/Test Equipment and Special Tools

Table 2: Support/Test Equipment and Special Tools

Item	Nomenclature	Manufacturer	Model No.	Calibration Required
1	Batteries (Lithium CR-123)	N/A	N/A	No
2	MIL-STD-1913 Rail	N/A	N/A	No
3	MIL-STD-1913 Rail Support Block	N/A	N/A	No
4	SOTS II Collimator	SBIR	SOTS II	No
5	Leupold Mark IV 6.5X – 20X 50mm (S/N: 281405N)	Leupold	Mark IV	No
6	Sniper Dayscopes (Dayscope Interoperability)	Variable	Variable	No
7	Mk13 Mod 5 MARS Rail	MARS	N/A	No
8	Tripod	N/A	N/A	No
9	Stop Watch	N/A	N/A	No
10	BA5590 Battery	N/A	N/A	No
11	Weigh Scales	N/A	N/A	Yes
12	Digital Calipers	N/A	N/A	Yes
13	Flyer's Summer Gloves (NSN: 415-01-029-0113)	N/A	N/A	No
14	Sniper Rifles (Host Weapons)	Variable	Variable	No
15	Ammunition (As Required)	N/A	N/A	No
16	SWAF Outdoor Range	N/A	N/A	No

## 4.0 Power and Environmental Requirements

### 4.1 Power Requirements

Batteries: Lithium AA and/or Lithium CR123  
 110 Volts Alternating Current (VAC)  
 BA-5590 battery

### 4.2 Environmental Requirements

Environmental Conditions: Operating Temperature: 72±5°F  
 Operating Humidity: 35% - 55%



## 5.0 **Developmental Testing**

### 5.1 **Developmental Testing Description**

Each INOD will be evaluated in order to determine compliance to the Developmental Testing Phases and Requirements as described in the next sections. In general, the order of testing will be Phase I, Phase II, followed by Phase III. Developmental Testing and will be performed in a laboratory environment, at the NSWCrane Outdoor Range (SWAF), and at DRS Technologies (INOD Block III Contractor) facilities (with a Government witness).

**Thresholds/Objectives:** Performance parameters and features in the Performance Specification are assigned numerical or verbal values. In some instances, assigned or Objective (O) requirements that exceed the minimum requirements of this specification are listed in conjunction with the minimum or Threshold (T) requirements. In these instances, the threshold and objective parameters will be annotated as such. In the event no (T) or (O) value is assigned, the implied value will be a (T) parameter. Objective values may also be identified without a Threshold value, in which case the Threshold is not applicable.

**Nomenclature:** The use of the term INOD, unless otherwise stated, refers only to the configuration of the device specified within this document and not to other versions of INOD.

## 5.2 Developmental Testing Requirements/Procedures

### **WARNING**

**HAZARD: LITHIUM AND ALKALINE BATTERIES CAN LEAK, DISCHARGE, EXPLODE, AND CAUSE FIRE.**

**CONSEQUENCE: EYE INJURY OR SERIOUS SKIN BURNS.**

**MITIGATION: CHECK BATTERIES FOR BULGING. IF BULGES ARE FOUND, DO NOT USE. DO NOT DISPOSE IN FIRE. DO NOT EXPOSE TO OPEN FLAME. DO NOT SHORT CIRCUIT. PLACE BATTERIES IN MARKED CONTAINERS FOR RECYCLING IAW COMMAND ENVIRONMENTAL PROTECTION OFFICE BATTERY RECYCLING PROGRAM.**

### **CAUTION**

**HAZARD: LITHIUM AND ALKALINE BATTERIES CAN LEAK, DISCHARGE, EXPLODE, AND CAUSE FIRE.**

**CONSEQUENCE: DAMAGE TO UNITS UNDER TEST (UUT)/EQUIPMENT.**

**MITIGATION: CHECK BATTERIES FOR BULGING. IF BULGES ARE FOUND, DO NOT USE. DO NOT DISPOSE IN FIRE. DO NOT EXPOSE TO OPEN FLAME. DO NOT SHORT CIRCUIT. PLACE BATTERIES IN MARKED CONTAINERS FOR RECYCLING IAW COMMAND ENVIRONMENTAL PROTECTION OFFICE BATTERY RECYCLING PROGRAM.**

### 5.2.1 Configuration (PS 3.1.3.1) (Go/No Go)

#### 5.2.1.1 *PS Requirement*

The INOD shall be an inline, clip-on device that mounts in front of an existing SOF dayscope.

#### 5.2.1.2 *Testing Plan Description*

Verify the INOD is an inline, clip-on device that mounts in front of an existing SOF dayscope.

#### 5.2.1.3 *Procedure/Data*

The INOD was verified to be an inline, clip-on device that mounts in front of an existing SOF dayscope.

#### 5.2.1.4 *Result*

**Meets Requirement**

### 5.2.2 Interoperability with SOF Weapon Systems (PS 3.1.3.2) (Go/No Go)

#### 5.2.2.1 *PS Requirement*

The INOD system's centerline shall be optimized for compatibility with all SOF weapon systems. Optical centerline from top of MIL-STD-1913 rail shall be 1.5 (+/- .02) inches. The INOD shall be non-interfering with the operation of the host weapon system including dayscope.

#### 5.2.2.2 *Support Equipment*

Digital Calipers; Mk13, Mk15, Mk20 and Mk21 (PSR) Weapon Systems with MIL-STD-1913 Rail attached.

### 5.2.2.3 Testing Plan Description

Measure the optical centerline from the top of the MIL-STD-1913 rail to the center of the INOD's exit optical path. Verify the INOD does not interfere with the operation of the host weapon system and dayscope.

### 5.2.2.4 Procedure/Data

Measure the optical centerline from the top of the MIL-STD-1913 rail to the center of the INOD's exit optical path. Verify the INOD does not interfere with the operation of the host weapon system and dayscope. Optical Centerline = 1.5 inches

### 5.2.2.5 Result

**Meets Requirement**

## 5.2.3 Weight (PS 3.1.3.3) (Go/No Go)

### 5.2.3.1 PS Requirement

The INOD shall weigh less than 4 lbs (T), 1.5 lbs (O). The weight shall include the system, batteries, and mounts.

### 5.2.3.2 Support Equipment

Calibrated Weigh Scales

### 5.2.3.3 Testing Plan Description

Weigh the INOD with the batteries and mounts included.

### 5.2.3.4 Procedure/Data

The INOD was weighed with the batteries and mount included and also with the batteries, objective lens cover, shroud and mount.

Weight (w/6 CR123 batteries, objective lens cover, shroud and mount) = 3.2590 pounds

Weight (w/6 CR123 batteries and mount) = 3.096 pounds

### 5.2.3.5 Result

**Meets Threshold**

## 5.2.4 Engagement Range (PS 3.1.3.4) (Go/No Go)

### 5.2.4.1 PS Requirement

The INOD will allow SOF snipers to successfully engage enemy combatants under all lighting conditions at (b)(3) Engagement range is the range at which a trained sniper can detect, acquire and put rounds on the target (i.e. enemy combatant) and does not imply specific detection, recognition or identification requirements, which are identified separately.

### 5.2.4.2 Support Equipment, Testing Plan Description, Procedure/Data

Operational Test & Evaluation (OT&E) event at Niland, CA scheduled for 24 -28 March 2014

### 5.2.4.3 Result

**Meets Threshold**

## 5.2.5 Covert Operation (3.1.3.5) (Go/No Go)

### 5.2.5.1 PS Requirement

The INOD system will allow the SOF Snipers to

(b)(3)

(b)(3)

### 5.2.5.2 Support Equipment, Testing Plan Description, Procedure/Data

Operational Test & Evaluation (OT&E) event at Niland, CA scheduled for 24 -28 March 2014

### 5.2.5.3 Result

**Meets Objective**

## 5.2.6 Compatibility with Protective Gear (PS 3.1.3.6) (Go/No Go)

### 5.2.6.1 PS Requirement

The INOD switches and controls shall be functional while wearing Flyer's Summer Gloves (NSN 415-01-029-0113).

### 5.2.6.2 Support Equipment

Flyer's Summer Gloves (NSN: 415-01-029-0113)

### 5.2.6.3 Testing Plan Description

Verify the INOD's switches and controls are functional while wearing the Flyer's Summer Gloves.

### 5.2.6.4 Procedure/Data

The INOD's switches and controls were verified to be functional while wearing the Flyer's Summer Gloves.

### 5.2.6.5 Result

**Meets Requirement**

## 5.2.7 Major Components (PS Para 3.2)

### 5.2.7.1 PS Requirement

The INOD shall contain the following Major Components:

- a) INOD with attached adjustable locking throw lever mounting bracket
- b) Detachable connecting hoods/couplers for INOD to dayscope connection
- c) Operators/Maintenance Manual with Quick Reference Card with each delivered system
- d) Batteries
- e) Daylight/Lens Cover with lanyard
- f) Lens Cleaning Kit
- g) Soft Carrying Case
- h) Interface Cable(s) (Video, Power, Remote Control)

#### 5.2.7.2 Testing plan Description

Verify the Major Components are included.

#### 5.2.7.3 Procedure/Data

The following Major Components were included:

- ☒ INOD with attached adjustable locking throw lever mounting bracket
  - ☒ Detachable connecting hoods/couplers for INOD to dayscope connection
  - ☒ Operators/Maintenance Manual with Quick Reference Card with each delivered system
  - ☒ Batteries
  - ☒ Daylight/Lens Cover with lanyard
  - ☒ Lens Cleaning Kit
  - ☒ Soft Carrying Case
- Interface Cable(s):
- ☒ Video (GUI Interface)
  - ☒ External Power (BA-5590)
  - ☒ Remote Control
- Other:
- ☒ Anti-Reflection Device (ARD)
  - ☒ 3/8" wrench

#### 5.2.7.4 Result

**Meets Requirement**

### 5.2.8 Mounting Bracket (PS 3.3.1)

#### 5.2.8.1 PS Requirement

The INOD shall include an adjustable locking throw lever mounting system to allow for single hand operation and attachment/mounting on MIL-STD-1913 rails using no tools. The Mounting Bracket shall be designed to reduce potential snag hazards in the field and shall not damage the weapon rail. (T) The INOD should allow the mount base to be adjusted (i.e. spacers) to ensure proper alignment with dayscopes outside the 1.5" height above rail requirement (O).

#### 5.2.8.2 Support Equipment

MIL-STD-1913 Rail

#### 5.2.8.3 Testing Plan Description

Describe the adjustable throw lever mounting system and ensure it allows for single handed operation and attachment to a MIL-STD-1913 rail without using tools. Inspect for potential snag hazards and that the throw lever does not damage the weapon rail.

#### 5.2.8.4 Procedure/Data

The INOD's mounting bracket is a dual locking (one forward locking and one rear locking), adjustable (with included 3/8" wrench), throw lever mounting system which allows for attachment/mounting on MIL-STD-1913 rails. The 3/8" wrench tool is required to ensure the adjustment of the mounting bracket is set appropriately so the correct amount of torque is applied when installing the INOD to the MIL-STD-

1913 rail. The adjustment of the mounting bracket will vary from weapon rail to weapon rail, thus the requirement for the 3/8" wrench tool. There were no evident snag hazards and no damage was evident to the weapon rail.

#### 5.2.8.5 *Result*

**Meets Threshold**

### 5.2.9 Daylight/Lens Cover (PS 3.3.2)

#### 5.2.9.1 *PS Requirement*

A daylight/lens cover shall be provided for protection of the objective lens in the daytime. It shall remain attached to the INOD and in closed position when not in use. It shall remain locked in the open position during live fire operations and shall not close due to recoil shock or overpressure from the weapon (T). The daylight/lens cover shall provide impact protection, e.g. drop protection for the objective lens housing (O).

#### 5.2.9.2 *Testing Plan Description*

Verify the Daylight/Lens Cover remains attached to the INOD and remains in a closed position when not in use. Refer to Weapons Firing (Weapons Shock) to verify it remains locked in the open position during live fire operations and does not close due to recoil shock or overpressure from the host weapon.

#### 5.2.9.3 *Procedure/Data*

The INOD's Daylight/Lens Cover remained attached and in a closed position when not in use. The INOD's Daylight/Lens Cover remained attached and in the open position during live fire operations and did not close due to recoil shock or overpressure from the host weapon. This was verified by a Government witness during DRS Weapons Shock testing as well as NSW Crane Weapons Shock testing performed by Government personnel.

#### 5.2.9.4 *Result*

**Meets Requirement**

### 5.2.10 Coupling Device (PS 3.3.3)

#### 5.2.10.1 *PS Requirement*

The INOD shall include a soft coupling device to block light leakage and dust intrusion at the interface between the dayscope objective lens and in line clip-on INOD configuration for 40mm, 50mm, and 56mm dayscope objective lenses.

#### 5.2.10.2 *Support Equipment*

All Dayscopes listed in Dayscope Interoperability requirement; MIL-STD-1913 Rail

#### 5.2.10.3 *Testing Plan Description*

Verify the Coupling Device blocks light leakage and dust intrusion at the interface between the dayscope objective lens and the INOD in-line eyepiece configuration for 40mm, 50mm, and 56mm dayscope objective lenses.

#### 5.2.10.4 *Procedure/Data*

The INOD's Coupling Device was verified to block light leakage and reduce dust intrusion at the

interface between the dayscope objective lens and the INOD in-line eyepiece configuration for all dayscopes listed in the Dayscope Interoperability requirement.

#### 5.2.10.5 Result

**Meets Requirement**

### **5.2.11 Lens Cleaning Kit (PS 3.3.4)**

#### 5.2.11.1 PS Requirement

The lens cleaning kit shall consist of at least a lens cleaning paper booklet, soft bristle brush and shall fit within the soft carrying case.

#### 5.2.11.2 Testing Plan Description

Verify the Lens Cleaning Kit consists of lens cleaning paper booklet, soft bristle brush and fits within the soft carrying case.

#### 5.2.11.3 Procedure/Data

The INOD's Lens Cleaning Kit consisted of lens cleaning paper booklet, soft bristle brush and did fit within the soft carrying case.

#### 5.2.11.4 Result

**Meets Requirement**

### **5.2.12 Soft Carrying Case (PS 3.3.5)**

#### 5.2.12.1 PS Requirement

The INOD shall have a padded soft carrying case that provides space and protection for the components listed in PS paragraph 3.2. The case shall be made of nylon with closed cell foam padding. It shall also have attachments for web belt and pack mounting and a FASTEX style clip (T).

#### 5.2.12.2 Testing Plan Description

Verify the soft carrying case is padded and provides space and protection for the Major Components required. Verify the case is made of nylon with closed cell foam padding and has attachments for web belt and pack mounting and a FASTEX style clip.

#### 5.2.12.3 Procedure/Data

The INOD's soft carrying case was verified to be padded and provided space and protection for the Major Components required. The soft carrying case was made of nylon with closed cell foam padding and had attachments for web belt and pack mounting and a FASTEX style clip.

#### 5.2.12.4 Result

**Meets Requirement**

### **5.2.13 Surfaces (PS 3.3.6)**

#### 5.2.13.1 PS Requirement

External surfaces (except for light transmitting elements) shall be finished in a neutral flat color that is non-reflective and corrosion resistant. The external lens and eyepiece shall not be obscured by

condensation. The INOD shall have corrosion resistant and scratch resistant coatings on all exposed optics, which permit operation in salt sprays and blowing sand. All internal surfaces (except light transmitting elements) that are exposed to light from external and internal sources shall be finished to achieve the lowest feasible light reflectance (T).

#### 5.2.13.2 Testing Plan Description

Inspect and verify the External surfaces (except for light transmitting elements) are finished in a neutral flat color that is non-reflective and corrosion resistant. Verify the external lens and eyepiece is not obscured by condensation. Verify the INOD has corrosion resistant and scratch resistant coatings on all exposed optics, which permit operation in salt sprays and blowing sand. Examine all internal surfaces (except light transmitting elements) that are exposed to light from external and internal sources are finished to achieve the lowest feasible light reflectance.

#### 5.2.13.3 Procedure/Data

The INOD's external surfaces (except for light transmitting elements) were inspected and verified they were finished in a neutral flat color (Flat Dark Earth) that was non-reflective and corrosion resistant. The objective lens and eyepiece lens were verified to not be obscured by condensation. The INOD was verified to have corrosion resistant and scratch resistant coatings on all exposed optics, which permitted operation in salt sprays and blowing sand. All internal surfaces (except light transmitting elements) that are exposed to light from external and internal sources were examined to be finished to achieve the lowest feasible light reflectance.

#### 5.2.13.4 Result

**Meets Threshold**

### **5.2.14 Adjustments and Controls (PS 3.3.7)**

#### 5.2.14.1 PS Requirement

All controls shall be located on the INOD. These controls shall include power-on/off, auto/manual gain, polarity, non-uniformity correction, and focus. The controls shall permit fingertip control throughout the range of the operational environment and shall be operable by either hand and shall not cause the operator to lose visibility of the sight picture while adjusting. The design shall reflect the need for operation by soldiers wearing cold weather and/or level IV Mission Oriented Protective Posture (MOPP) clothing. Controls shall maintain position throughout system use in the operational environment. The INOD shall have a focus knob to control system focus from near focus to past infinity, which shall be visibly noted by a defocused image. Sufficient tension shall exist to prevent accidental movement of the focus knob. Controls and adjustments shall include a simple and intuitive operator control and adjustment schema (T).

#### 5.2.14.2 Testing Plan Description

Examine all controls located on the INOD. Verify these controls include power-on/off, auto/manual gain, polarity, non-uniformity correction, and focus. Verify the controls permit fingertip control throughout the range of the operational environment and are operable by either hand and do not cause the operator to lose visibility of the sight picture while adjusting. Verify the design reflects the need for operation by soldiers wearing cold weather and/or level IV Mission Oriented Protective Posture (MOPP) clothing. Verify controls maintain position throughout system use in the operational environment. Verify the INOD has a focus knob to control system focus from near focus to past infinity, which is visibly noted by a defocused image. Verify sufficient tension exists to prevent accidental movement of the focus knob. Verify controls and adjustments include a simple and intuitive operator control and adjustment schema.



#### 5.2.14.3 Procedure/Data

All controls were examined to be located on the INOD. These controls were verified to be power-on/off, auto/manual gain, polarity, non-uniformity correction, and focus. The controls were verified to permit fingertip control throughout the range of the operational environment. The INOD focus knob was verified to control system focus from near focus to past infinity, which was visible by an out of focus image.

**NOTE: The following were verified at the Operational Test & Evaluation (OT&E) event at Niland, CA scheduled for 24 -28 March 2014:**

#### 5.2.14.4 Support Equipment, Testing Plan Description, Procedure/Data

Operational Test & Evaluation (OT&E) event at Niland, CA scheduled for 24 -28 March 2014

Verify the controls are operable by either hand and do not cause the operator to lose visibility of the sight picture while adjusting. Verify the design reflects the need for operation by soldiers wearing cold weather and/or level IV Mission Oriented Protective Posture (MOPP) clothing. Verify controls maintain position throughout system use in the operational environment. Verify sufficient tension exists to prevent accidental movement of the focus knob. Verify controls and adjustments include a simple and intuitive operator control and adjustment schema.

#### 5.2.14.5 Result

**Meets Requirement – DT and OT**

### 5.2.15 Switches (PS 3.3.8)

#### 5.2.15.1 PS Requirement

The INOD switches shall be recessed and/or protected from inadvertent operations and damage. Controls shall exhibit tactile geometries that allow the operator to feel and discriminate between different switches in the dark.

#### 5.2.15.2 Testing Plan Description

Verify the INOD switches are recessed and/or protected from inadvertent operations and damage. Ensure controls exhibit tactile geometries allowing the operator to feel and discriminate between different switches in the dark.

#### 5.2.15.3 Procedure/Data

The INOD's switches have been verified to be recessed and/or protected from inadvertent operations and damage. Controls have been ensured to exhibit tactile geometries which allowed the operator to feel and discriminate between different switches in the dark.

#### 5.2.15.4 Result

**Meets Threshold - DT**

**Meets Threshold with Exception – OT&E**

### 5.2.16 Compass/Rangefinder (PS 3.3.9)

#### 5.2.16.1 PS Requirement

The INOD will include an integrated compass to provide the user with heading information with accuracy

no more than (b)(3)  
rangefinder capable of ranging

The INOD shall include an integrated eye-safe laser  
(b)(3)

#### 5.2.16.2 Testing Plan Description

Verify the INOD includes an integrated compass providing the user with heading information. The following is an objective (O) requirement and is not required to meet the minimum performance specification: Verify the INOD includes an integrated eye-safe laser rangefinder.

#### 5.2.16.3 Procedure/Data

The INOD includes an integrated compass providing the user with heading information within (b)(3) The INOD does not include an integrated eye-safe laser rangefinder.

#### 5.2.16.4 Result

**Meets Threshold**

### **5.2.17 Input/Output Interface (PS 3.3.10)**

#### 5.2.17.1 PS Requirement

The INOD shall have the ability to interface to external power sources, remote controls, and output video to external devices (T). The INOD shall have an interface to accept Laser Rangefinder and other sniper related data inputs (O).

#### 5.2.17.2 Testing Plan Description

Verify the INOD has the ability to interface to external power sources, remote controls, and output video to external devices. The following is an objective (O) requirement and is not required to meet the minimum performance specification: Verify the INOD has an interface to accept Laser Rangefinder and other sniper related data inputs.

#### 5.2.17.3 Procedure/Data

The INOD has been verified to have the ability to interface to external power sources (BA5590), remote controls, and output video to external devices via the SPOTR graphical user interface (GUI). The INOD will be verified at OT&E whether it has these aforementioned input/output capabilities.

#### 5.2.17.4 Support Equipment, Testing Plan Description, Procedure/Data

Operational Test & Evaluation (OT&E) event at Niland, CA scheduled for 24 -28 March 2014

#### 5.2.17.5 Result

**Meets Threshold – DT & OT&E**

### **5.2.18 Enemy Combatant Classification (PS 3.4.1.1)**

#### 5.2.18.1 PS Requirement

The INOD shall allow the SOF Sniper to detect and distinguish the following at ranges out to (b)(3)

(b)(3)

5.2.18.2 Support Equipment, Testing Plan Description, Procedure/Data

Operational Test & Evaluation (OT&E) event at Niland, CA scheduled for 24 -28 March 2014

5.2.18.3 Result

**Meets Threshold**

**5.2.19 Environmental Observations (PS 3.4.1.2)**

5.2.19.1 PS Requirement

The INOD shall be able to determine

(b)(3)

(b)(3)

5.2.19.2 Support Equipment, Testing Plan Description, Procedure/Data

Operational Test & Evaluation (OT&E) event at Niland, CA scheduled for 24 -28 March 2014

5.2.19.3 Result

**Meets Threshold**

**5.2.20 (b)(3) (PS 3.4.1.3)**

5.2.20.1 PS Requirement

The INOD shall allow SOF Snipers to observe

(b)(3)

(b)(3)

5.2.20.2 Support Equipment, Testing Plan Description, Procedure/Data

Operational Test & Evaluation (OT&E) event at Niland, CA scheduled for 24 -28 March 2014

5.2.20.3 Testing Plan Description

With the INOD installed on a weapon in front of a dayscope, verify SOF Snipers can

(b)(3)

(b)(3)

5.2.20.4 Procedure/Data

With the INOD installed on a weapon in front of a dayscope

(b)(3)

(b)(3) using standard ammunition.

5.2.20.5 Result

**Meets Requirement**

**5.2.21 Start-Up Time (PS 3.4.2.1)**

5.2.21.1 PS Requirement

The INOD, at an ambient temperature of 23°C ( $\pm$  2°C), shall have an initial power-up time less than or equal to

(b)(3)

Power-up from standby shall not exceed

(b)(3)

5.2.21.2 Support Equipment

Stop Watch; Batteries: Lithium AA and/or Lithium CR-123

5.2.21.3 Testing Plan Description

Verify the INOD, at an ambient temperature of 23°C ( $\pm 2^\circ\text{C}$ ), has an initial power-up time (b)(3)

(b)(3) Verify the Power-up time from standby does not exceed (b)(3)

(b)(3) Record all data and any discrepancies on the Test Data Sheet in Appendix A.

5.2.21.4 Procedure/Data

Initial Start-up Time:

(b)(3)

Start-up Time from Standby: (b)(3)

5.2.21.5 Result

Initial Start-up Time: **Meets Threshold**

Start-Up Time from Standby: **Meets Objective**

**5.2.22 Operating Time (PS 3.4.2.2)**5.2.22.1 PS Requirement

The INOD shall have an internal battery compartment that will house the primary batteries and enable continuous operation of the system in normal operating mode for a minimum of (b)(3)

(b)(3) The system shall be capable of being powered externally by a BA5590 battery (T). To extend the operational life, (b)(3) s allowed in order to meet the Threshold and/or

Objective requirements

(b)(3)

(b)(3)

5.2.22.2 Support Equipment

Stop Watch; Batteries (Full Capacity): Lithium CR-123; BA5590 Battery

5.2.22.3 Testing Plan Description

With the INOD in normal operating mode, evaluate its operating time on one set of internal batteries (b)(3)

(b)(3)

Verify the INOD can be powered by a BA5590 battery.

5.2.22.4 Procedure/Data

With the INOD in normal operating mode, the following concludes the INOD's operating time (b)(3)

(b)(3) of both battery compartments:

S/N: 000103

(b)(3)

S/N: 000107

The INOD was verified to operate on a BA5590 battery.

5.2.22.5 Result

**Meets Threshold**

**5.2.23 Batteries (PS 3.4.2.3)**5.2.23.1 PS Requirement

The INOD shall use standard, commercial batteries including but not limited to, "AA," "AA Lithium" or "CR123" (T) or both CR123 and "AA" batteries (O). The batteries shall be easily replaced/installed in the

field by the operator with one hand, without using tools, and without removing the INOD from the weapon. The INOD shall have battery polarity indicators and reverse polarity protection (T) or be capable of operating regardless of the battery orientation (O).

#### 5.2.23.2 Testing Plan Description

Verify the INOD uses standard, commercial batteries. Verify the batteries can be easily replaced/installed in the field by the operator with one hand, without using tools, and without removing the INOD from the weapon. Ensure the INOD has battery polarity indicators and reverse polarity protection. The following is an objective (O) requirement and is not required to meet the minimum performance specification:

Evaluate whether the INOD can operate on both CR123 and AA batteries at the same time. The following is an objective (O) requirement and is not required to meet the minimum performance specification:

Evaluate whether the INOD is capable of operation regardless of the battery orientation. Record all data and any discrepancies on the Test Data Sheet in Appendix A.

#### 5.2.23.3 Procedure/Data

The INOD operates on CR-123 batteries which are standard, commercial batteries. The batteries can be easily replaced/installed in the field with one hand, without using tools, and without removing the INOD from the host weapon. The INOD has battery polarity markings/indicators and has reverse battery polarity protection.

#### 5.2.23.4 Result

**Meets Threshold**

### 5.2.24 Other Battery/Power Features (PS 3.4.2.4)

#### 5.2.24.1 PS Requirement

The On/Off switch shall be labeled and contain positive verification of the ON and OFF locations (T) and also have a power save mode (O). The INOD shall have the ability to run from an external power source. The battery lid shall be connected to the body of the INOD to prevent loss. The INOD shall contain a visible low battery indicator within the system field of view (T).

#### 5.2.24.2 Support Equipment

BA5590 battery; external power cable; Lithium CR-123 batteries, Manfrotto Tripod, MARS rail

#### 5.2.24.3 Testing Plan Description

Verify the On/Off switch is labeled and contains positive verification of the ON and OFF locations.

Verify the INOD operates from an external power source. Ensure the battery lid is connected to the body of the INOD to prevent loss. Verify the INOD contains a visible low battery indicator within the system field of view. The following is an objective (O) requirement and is not required to meet the minimum performance specification: Evaluate whether the INOD has a power save mode. Record all data and any discrepancies on the Test Data Sheet in Appendix A.

#### 5.2.24.4 Procedure/Data

The INOD's On/Off switch is labeled and contains visible, positive verification of the ON and OFF switch locations. The INOD operates from a BA5590 battery. The battery compartment lid is permanently connected to the housing of the INOD. The INOD is equipped with a visible low battery indicator within the system's display field of view. The INOD is equipped with a power save mode (Standby mode).

5.2.24.5 Result**Meets Objective****5.2.25 Security (PS 3.4.3)**5.2.25.1 PS Requirement

The INOD, while fully operating, shall not emit noise or light that is detectable by the human ear/eye or a GEN II/III night vision device in any direction at a distance (b)(3) T). A detachable lens hood or similar glare reduction device shall be included (T).

5.2.25.2 Support Equipment, Testing Plan Description, Procedure/Data

Operational Test & Evaluation (OT&E) event at Niland, CA scheduled for 24 -28 March 2014

5.2.25.3 Result**Meets Requirement****5.2.26 Dayscope Interoperability (PS 3.4.4)**5.2.26.1 PS Requirement

The INOD shall be optimized for use with SOF Sniper Dayscopes set at 15X magnification (T), or optimized for use with Dayscopes ranging from 5X to 25X variable magnification (O). Representative Dayscopes include but are not limited to the Schmidt and Bender 5-25x56mm PMII, the Nightforce 3.5-15x50mm, the Nightforce 5.5-22x56mm, and the Leupold 6-20x50mm.

5.2.26.2 Support Equipment

Schmidt and Bender 5-25x56mm PMII, the Nightforce 3.5-15x50mm, the Nightforce 5.5-22x56mm, and the Leupold 6-20x50mm.

Operational Test & Evaluation (OT&E); Niland, CA; 24 -28 March 2014

Follow-on Operational Test & Evaluation; Camp Pendleton, CA; 24 – 26 June 2014

5.2.26.3 Testing Plan Description

Verify the INOD is optimized for use with the aforementioned 15X magnification dayscopes. The following is an objective (O) requirement and is not required to meet the minimum performance specification: Evaluate whether the INOD is optimized for use with 5X to 25X variable magnification dayscopes.

5.2.26.4 Procedure/Data

The INOD was verified to be optimized for use with the aforementioned dayscopes set at 15X magnification. Additionally, the INOD was verified to be operational but not optimal for 5 – 25X variable magnification from the aforementioned dayscopes.

5.2.26.5 Result**Meets Requirement - DT****Meets Requirement with Exception – OT&E****5.2.27 Accuracy (PS 3.4.5)**5.2.27.1 PS Requirement

The INOD shall allow a trained sniper to maintain his current level of accuracy (T), and deliver precise fire within one minute of angle (1 MOA) (O). Any Sight placed on the weapon shall not degrade the shooters current level of accuracy. If a weapon is good to within 1 MOA accuracy, then even with all other factors, environment, shooter, ammo, etc., taken into account, the shooter shall be able to maintain that level of accuracy or whatever accuracy he can attain with his current scope.

#### 5.2.27.2 Support Equipment, Testing Plan Description, Procedure/Data

Operational Test & Evaluation (OT&E); Niland, CA; 24 -28 March 2014

Follow-on Operational Test & Evaluation; Camp Pendleton, CA; 24 – 26 June 2014

#### 5.2.27.3 Result

#### **Meets Requirement – DT and OT&E**

**NOTE: Table 3 represents NSWC Crane’s INOD Prototype Systems’ Pre-Firing vs. Post-Firing Boresight Image Alignment results. The NSWC Crane Boresight Image Alignment testing procedure, with a Pass/Fail criterion of  $\leq 1$  MOA accuracy, will be the standard for meeting the Accuracy requirement for INOD Block III production systems.**

Table 3: NSWC Crane Pre-Firing vs. Post Firing Boresight Alignment Data

Serial Number	Pre-Firing Azimuth Clicks (Left/Right)	Pre-Firing Elevation Clicks (Up/Down)	Pre-Firing Boresight (MOA)	Post-Firing Azimuth Clicks (Left/Right)	Post-Firing Elevation Clicks (Up/Down)	Post-Firing Boresight (MOA)	Pre-Post MOA Change
000101							
000102							
000103							
000104							
000107							
000109							
000113							

(b)(3)

**NOTE: Table 4 represents Boresight Image Alignment results Post-OT&E. Refer to the OT&E Report for the number of rounds fired per each INOD S/N. S/N: 000113 was not fired at OT&E.**

Table 4: Post-OT&E Boresight Alignment Data

Serial Number	Post-OT&E Azimuth Clicks (Left/Right)	Post-OT&E Elevation Clicks (Up/Down)	Post-OT&E Boresight (MOA)	Post-OT&E MOA Change
000101				
000102				
000103				
000104				
000107				
000109				

(b)(3)

**NOTE: Table 5 and Table 6 represent Boresight Image Alignment data/results from the Follow-On**

### OT&E and DT Testing with the Modified Attenuator.

Table 5: Follow-On OT Boresight Alignment Data with Modified Attenuator

Serial Number	Pre-Follow On OT&E Azimuth (Left/Right)/ Elevation (Up/Down) Clicks	Pre-Follow On OT&E Boresight (MOA)	Post-Follow On OT&E Azimuth (Left/Right)/ Elevation (Up/Down) Clicks	Post-Follow On OT&E (MOA)
000105				
000109				
000113		(b)(3)		
000114				
000115				

**NOTE: S/N: 000109 had the production (#3) retainer ring installed in the system between the Follow-On OT&E event and the Follow-On DT weapons shock testing.**

Table 6: Follow-On DT Boresight Alignment Data with Modified Attenuator

Serial Number	Pre Follow-On DT Azimuth (Left/Right)/ Elevation (Up/Down) Clicks	Pre Follow-On DT Boresight (MOA)	Post Follow-On DT Azimuth (Left/Right)/ Elevation (Up/Down) Clicks	Post Follow-On DT (MOA)
000105				
000109				
000113		(b)(3)		
000114				
000115				

#### 5.2.28 Repeatability (PS 3.4.6)

##### 5.2.28.1 PS Requirement

The INOD shall not lose more than (b)(3) of accuracy when repeatedly dismounted from the weapon and remounted (T) or shall have no loss of zero when remounted (O).

##### 5.2.28.2 Support Equipment

Lithium CR-123 batteries; Leupold Mark IV 6.5-20 x 50mm, MIL-STD-1913 Rail, Rail Mount Adapter, SOTS II Collimator; Boresight Alignment Target; ATP/12/JXQR/136 Rev-; Chg1 ATP for INOD Block IV; AN/PAS-31

##### 5.2.28.3 Testing Plan Description

Refer to ATP/12/JXQR/136 Rev-; Chg1 ATP for INOD Blk IV; AN/PAS-31. Perform Repeatability testing utilizing section 4.3.2 from the referenced ATP. Verify the INOD did not lose more than (b)(3) accuracy when mounted and dismounted from the MIL-STD-1913 rail.

##### 5.2.28.4 Procedure/Data

ATP/12/JXQR/136 Rev-; Chg1 ATP for INOD Blk IV; AN/PAS-31 was referenced to perform Repeatability testing. Refer to Table 7 through Table 14 for Repeatability data:



Table 7: SN 000102 Repeatability Results

Reading (S/N: 000102)	Azimuth Clicks (Left/Right)	Elevation Clicks (Up/Down)	Boresight (MOA)	Repeatability (MOA Change)
1				
2				
3			(b)(3)	
4				

Table 8: SN 000103 Repeatability Results

Reading (S/N: 000103)	Azimuth Clicks (Left/Right)	Elevation Clicks (Up/Down)	Boresight (MOA)	Repeatability (MOA Change)
1				
2				
3			(b)(3)	
4				

Table 9: SN 000107 Repeatability Results

Reading (S/N: 000107)	Azimuth Clicks (Left/Right)	Elevation Clicks (Up/Down)	Boresight (MOA)	Repeatability (MOA Change)
1				
2				
3			(b)(3)	
4				

**NOTE: Table 10 through Table 14 represents Repeatability data/results from the Follow-On DT Testing with the Modified Attenuator. (50 round increments)**

Table 10: Follow-On DT Repeatability Results S/N: 000105

Reading (S/N: 000105)	Azimuth Clicks (Left/Right)	Elevation Clicks (Up/Down)	Boresight (MOA)	Repeatability (MOA Change)
1				
2				
3			(b)(3)	
4				

**NOTE: S/N: 000109 had the production (#3) retainer ring installed in the system between the Follow-On OT&E event and the Follow-On DT weapons shock testing.**

Table 11: Follow-On DT Repeatability Results S/N: 000109 (100 round increments)

Reading (S/N: 000109)	Azimuth Clicks (Left/Right)	Elevation Clicks (Up/Down)	Boresight (MOA)	Repeatability (MOA Change)
1				
2				
3			(b)(3)	
4				

Table 12: Follow-On DT Repeatability Results S/N: 000113

Reading (S/N: 000113)	Azimuth Clicks (Left/Right)	Elevation Clicks (Up/Down)	Boresight (MOA)	Repeatability (MOA Change)
1				
2				
3			(b)(3)	
4				
5				

Table 13: Follow-On DT Repeatability Results S/N: 000114

Reading (S/N: 000114)	Azimuth Clicks (Left/Right)	Elevation Clicks (Up/Down)	Boresight (MOA)	Repeatability (MOA Change)
1				
2				
3			(b)(3)	
4				
5				

Table 14: Follow-On DT Repeatability Results S/N: 000115

Reading (S/N: 000115)	Azimuth Clicks (Left/Right)	Elevation Clicks (Up/Down)	Boresight (MOA)	Repeatability (MOA Change)
1				
2				
3			(b)(3)	
4				
5				

#### 5.2.28.5 Result

#### Meets Requirement – DT and OT&E

### 5.2.29 Waterproof/Immersion (PS Para 3.4.7)

#### 5.2.29.1 PS Requirement

The Sight shall be waterproof down to (b)(3) without a waterproof bag (T). The Sight shall be waterproof and pressure resistant down to (b)(3) without a waterproof bag (O).

#### 5.2.29.2 Support Equipment

Lithium CR-123 batteries (Qty: 6); Immersion tank (b)(3) Thelco Heat Chamber

#### 5.2.29.3 Testing Plan Description

The INOD shall be immersion tested down to (b)(3) without the aid of a waterproof bag.

#### 5.2.29.4 Procedure/Data

The INOD was immersion tested at 3 feet of water (1.4 psig) for 2 hours.

5.2.29.5 Result**Meets Threshold****5.2.30 Atmospheric Pressure (PS Para 3.4.8)**5.2.30.1 PS Requirement

The INOD shall be transportable and function effectively without degradation at altitudes up to (b)(3) feet above sea level (T).

5.2.30.2 Support Equipment

DRS Internal Testing Facility

5.2.30.3 Testing Plan Description

The INOD shall be tested at altitudes up to (b)(3) feet above sea level and be transportable and function effectively without degradation.

5.2.30.4 Procedure/Data

The INOD was tested, at an internal DRS facility with a Government witness, at an altitude of (b)(3) feet above sea level.

5.2.30.5 Result**Meets Requirement****5.2.31 Climatic Design (PS Para 3.4.9)**5.2.31.1 PS Requirement

The Sight shall be able to operate at temperatures between (b)(3) and withstand storage and transit at temperatures ranging from (b)(3) (T).

5.2.31.2 Support Equipment

DRS Internal Testing Facility

5.2.31.3 Testing Plan Description

DRS Testing Plan

5.2.31.4 Procedure/Data

Operational Temperature Testing (b)(3)  
Storage Temperature Testing: (b)(3)

5.2.31.5 Result**Meets Requirement****5.2.32 Salt Fog (PS Para 3.4.10)**5.2.32.1 PS Requirement

All external surfaces shall be rust and salt water corrosion resistant (T) when subjected to a 5% saltwater

solution for 48 hours followed by a 48-hour drying period.

#### 5.2.32.2 Support Equipment

DRS Internal Testing Facility

#### 5.2.32.3 Testing Plan Description, Procedure/Data

DRS Testing Plan (with Government witness)

#### 5.2.32.4 Result

**Meets Requirement**

### **5.2.33 Mobility and Transportability (PS Para 3.4.11)**

#### 5.2.33.1 PS Requirement

The Sight shall not be damaged by most military methods of transport/infiltration to include HMMWV, cargo aircraft, helicopters, static line airborne operations, Fast Boats, and Submersible Diving Vehicles (SDVs) (T).

#### 5.2.33.2 Support Equipment

DRS Internal Testing Facility

#### 5.2.33.3 Testing Plan Description, Procedure/Data

DRS Testing Plan

#### 5.2.33.4 Result

**Meets Requirement**

### **5.2.34 Compatibility (PS 3.4.12)**

#### 5.2.34.1 PS Requirement

The cheekweld, sight picture, and eye relief shall not change with use of the INOD by the operator while wearing various uniforms, equipment, and possibly eyeglasses appropriate for each individual mission. The shooting position shall be the same as current fielded rifles.

#### 5.2.34.2 Support Equipment, Testing Plan Description, Procedure/Data

Operational Test & Evaluation (OT&E) event at Niland, CA scheduled for 24 -28 March 2014

#### 5.2.34.3 Result

**Meets Requirement**

### **5.2.35 Reliability (PS Para 3.4.13)**

#### 5.2.35.1 PS Requirement

The Sight shall have a 90% probability of operating 36 hours on a 3-day mission without failure (T). The Sight shall have a 90% probability of operating 48 hours on a 4-day mission (O). The Sight shall be tested (and required to survive) in typical operational scenarios to include boat transit and airborne (free fall and static line) operations in a soft case (on weapon or individually).

### 5.2.35.2 Support Equipment, Testing Plan Description, Procedure/Data

Operational Test & Evaluation (OT&E) event at Niland, CA scheduled for 24 -28 March 2014

### 5.2.35.3 Result

**Meets Threshold with Exception – OT&E**

## 5.2.36 Survivability and Detectability (PS Para 3.4.14)

### 5.2.36.1 PS Requirement

The Sight shall have the ability to attach (b)(3) nd (b)(3)  
(O).

### 5.2.36.2 Result

(b)(3)

## 5.2.37 Blemishes and Image Defects (PS 3.4.15)

### 5.2.37.1 PS Requirement

The central viewing areas of the INOD when viewed through a 15x dayscope, shall have no more than two (2) blemishes, image defects, or dead pixels that subtend 0.2 milliradian or greater within the central to upper viewing area (0.5 degrees of the central upper scene). The Sight shall have no blemishes, image defects, or dead pixels that subtend 0.2 milliradian or greater within the central lower viewing area (0.5 degrees of the central lower scene).

### 5.2.37.2 Support Equipment

Leupold Mark IV 6.5-20 x 50mm, MIL-STD-1913 Rail, Rail Mount Adapter, SOTS II Collimator;  
Boresight Alignment Target; ATP/12/JXQR/136 Rev-; Chg1 ATP for INOD Block IV; AN/PAS-31

### 5.2.37.3 Testing Plan Description

Verify the central viewing areas of the INOD, when viewed through a 15X dayscope, does not have more than two (2) blemishes, image defects, or dead pixels. Record all data and any discrepancies on the Test Data Sheet in Appendix A.

### 5.2.37.4 Procedure/Data

The central viewing areas of the INOD, when viewed through a 15X dayscope, was verified to have zero (0) blemishes, image defects, or dead pixels.

### 5.2.37.5 Result

**Meets Requirement**

## 5.2.38 Weapons Shock (PS 3.4.16)

### NOTE:

**WEAPONS SHOCK DEVELOPMENTAL TESTING WAS PERFORMED BOTH BY DRS EMPLOYEES (WITH A GOVERNMENT WITNESS) AT AN EXTERNAL FIRING RANGE IN TEXAS AND NSWC CRANE EMPLOYEES WHO HOLD AN ACTIVE EXPLOSIVES CERTIFICATION AT THE SWAF OUTDOOR RANGE LOCATED AT CRANE, INDIANA.**

**5.2.38.1 PS Requirement**

The INOD in its operational configuration, shall not be damaged nor exhibit any degradation in performance from muzzle flash and/or recoil shock when subjected to five groups of five rounds each on the .50 caliber sniper rifles (MK15 and M107), the .300 WinMag caliber MK13, MK20, and the PSR (Model TBD). The INOD in its operational configuration, shall not be damaged nor exhibit any degradation in performance when subjected to 300 rounds of equivalent shock from any of the host weapons listed in 3.4.17. Equivalent shock is equal to an average peak acceleration height of (b)(3)

**5.2.38.2 Support Equipment**

DRS Live Fire Testing Event(s); NSWC Crane SWAF Outdoor Range; CR-JXN-SWAF-P-0042 Standard Operating Procedure (SOP) for Special Weapons Assessment Facility (SWAF) (Outdoor Range); Operational Test & Evaluation (OT&E) event at Niland, CA scheduled for 24 -28 March 2014; aforementioned sniper rifles

**5.2.38.3 Testing Plan Description**

Verify the INOD in its operational configuration is not damaged nor exhibits any degradation in performance when subjected to 300 rounds of equivalent shock from the aforementioned sniper rifles.

**5.2.38.4 Procedure/Data**

Refer to Table 15 which represents the weapons shock of each INOD S/N versus weapon type and weapon round count. Table 16 represents INOD S/N weapons shock round count totals.

Table 15: DT/OT&amp;E Weapons Shock Data

Serial Number	Sniper Rifle (Host Weapon)										
	Mk13 Mod 5	Mk15	Mk17	M110	M2010	M24	M107	Mk21 (PSR)			Mk20 (OT&E)
								.300 Win Mag	7.62 NATO (.308)	.338 Lapua	
000101		25							60		140
000102	25							60			160
000103	5			25	25	20	25				160
000104		25							60		160
000105								85			
000106	5	75								47	
000107	74		25							10	160
000109								85			8
000113								85			

Table 16: DT/OT&amp;E Weapons Shock Round Count Totals

S/N	000101	000102	000103	000104	000105	000106	000107	000109	000113
Totals	225	245	260	245	85	127	269	93	85

**NOTE: Table 17 and Table 18 represent INOD Weapons Shock data/results from the Follow-On OT&E and DT Testing with the Modified Attenuator.**

**NOTE: S/N: 000109 had the production (#3) retainer ring installed in the system between the**

### Follow-On OT&E event and the Follow-On DT weapons shock testing.

Table 17: Follow-On OT&amp;E and DT Weapons Shock Data

Serial Number	Sniper Rifle (Host Weapon)		
	Mk20 (OT&E)	Mk13 Mod 5 (OT&E)	Mk21 – PSR (.338 Lapua) (DT)
000105	36	44	220
000109			300
000113	37		263
000114	36		264
000115	36		264

Table 18: Follow On OT&amp;E and DT Weapons Shock Round Count Totals

S/N	000105	000109	000113	000114	000115
Totals	300	300	300	300	300

#### 5.2.38.5 *Result*

**Meets Requirement – DT and OT&E**

### 5.2.39 Host Weapon Mounting (PS 3.4.17)

#### 5.2.39.1 *PS Requirement*

The INOD shall mount to and align to standard rail systems (e.g. MIL-STD1913 i.e. Picatinny Rail) and be compatible with the MK13, MK15, MK20, M110, M2010, M24, M107, PSR (Model TBD) and other sniper rifles and rounds commonly used by SOF.

#### 5.2.39.2 *Testing Plan Description*

Verify the INOD mounts to and aligns to standard rail systems and is compatible with the aforementioned sniper rifles.

#### 5.2.39.3 *Procedure/Data*

The INOD has been verified to mount to the following sniper rifles: MK13, MK15, MK20, M110, M2010, M24, M107, and PSR (MK21).

#### 5.2.39.4 *Result*

**Meets Requirement**

### 5.2.40 Electromagnetic Interference (PS Para 3.4.18)

#### 5.2.40.1 *PS Requirement*

The INOD performance shall not be affected by electromagnetic emissions from battlefield electronic devices operating with (b)(3) of the system, nor experience performance degradation when subjected to the electric fields outlined in Table 1. Per MIL-STD-461F, all referenced field strengths are measured at the device under test.

Table 19: EMI Requirements

Frequency Range (MHz)	RMS Field Strength (V/M)	Polarity
-----------------------	--------------------------	----------

(b)(3)

5.2.40.2 Support Equipment

DRS Internal Testing Facility

5.2.40.3 Testing Plan Description, Procedure/Data

DRS Testing Plan (with Government witness)

5.2.40.4 Result**Meets Requirement****5.2.41 Workmanship (PS Para 3.5)**5.2.41.1 PS Requirement

The INOD optical components shall not contain foreign matter—such as dust, dirt, fingerprints, or moisture—that can be detected by visual examination. Joints and seams shall be a tight fit, and electrical wiring shall be secure and without unbroken insulation. All assemblies shall be free from cracks, splits, cold flow, shrinkage, inclusions, porosity, or any similar characteristics. Threads shall be full and undamaged for the entire length or depth. All moving parts shall be examined to ensure that they move freely throughout their entire range without sticking, binding, or creeping.

5.2.41.2 Testing Plan Description

Visually examine the INOD. Examine the exterior of all components for any indication of shipping damage. Verify there are no scratches, dust, dirt, fingerprints, or moisture on the optics; no cracks, sharp edges, nicks, or burrs on the housing; and joints and seams are a tight fit. Ensure that all mechanical controls and knobs rotate/operate easily, smoothly, and correctly.

5.2.41.3 Procedure/Data

The INOD's exterior components were visually examined for any indication of shipping damage. Verification was also made that there were no scratches, dust, dirt, fingerprints, or moisture on the optics; no cracks, sharp edges, nicks, or burrs on the housing; and joints and seams were a tight fit. All mechanical controls and knobs were ensured they rotated/operated easily, smoothly, and correctly.

5.2.41.4 Result**Meets Requirement**



**6.0 Conclusion**

The INOD Block III Systems Met all Developmental Testing Requirements. NSWCrane's recommendation would be to Accept these INOD Block III systems and move forward with the next step in the Contracting Acquisition Strategy.

**APPENDIX A: INOD BLOCK III DEVELOPMENTAL TESTING MATRIX**

Table A-1: INOD Block III Developmental Testing Matrix

Technical Parameter (Performance Specification Para)	Testing Agency	Technical Requirement	Testing Data	Testing Results (Pass/Fail)
<b>KEY PERFORMANCE PARAMETERS</b>				
<b>Configuration (3.1.3.1)</b>	NSWC Crane	The INOD-Block III shall be an inline, clip-on device that mounts in front of an existing SOF dayscope.		Meets Requirement
<b>Interoperability with SOF Weapon Systems (3.1.3.2)</b>	NSWC Crane	The INOD system's centerline shall be optimized for compatibility with all SOF weapon systems. Optical centerline from top of MIL-STD-1913 rail shall be 1.5 (+/- .02) inches. The INOD shall be non-interfering with the operation of the host weapon system including dayscope.	Optical Centerline = 1.5 inches	Meets Requirement
<b>Weight (3.1.3.3)</b>	NSWC Crane	The INOD shall weigh less than 4 lbs (T), 1.5 lbs (O). The weight shall include the system, batteries, and mounts.	Weight (w/6 CR123 batteries, objective lens cover, shroud and mount) = 3.2590 pounds Weight (w/6 CR123 batteries and mount) = 3.096 pounds	Meets Requirement
<b>Engagement Range (3.1.3.4)</b>	NSW OT&E	The INOD will allow SOF snipers to successfully engage enemy combatants under all lighting conditions at (b)(3) (b)(3) Engagement range is the range at which a trained sniper can detect, acquire and put rounds on the target (i.e. enemy combatant) and does not imply specific detection, recognition or identification requirements, which are identified separately.		Meets Threshold

Technical Parameter (Performance Specification Para)	Testing Agency	Technical Requirement	Testing Data	Testing Results (Pass/Fail)
<b>Covert Operation (3.1.3.5)</b>	NSW OT&E	The INOD system will allow the SOF Snipers to operate in an (b)(3)  (b)(3)		Meets Objective
<b>Compatibility with Protective Gear (3.1.3.6)</b>	NSWC Crane	The INOD switches and controls shall be functional while wearing Flyer's Summer Gloves (NSN 415-01-029-0113).		Meets Requirement
<b>Major Components (3.2)</b>	NSWC Crane	The INOD-BLOCK III shall be a weapon mountable in line clip-on thermal sight for use on SOF Sniper rifles. The INOD-BLOCK III shall contain the following Major Components:  a) Sight with attached adjustable locking throw lever mounting bracket b) Detachable connecting hoods/couplers for night sight to dayscope connection c) Operators/Maintenance Manual with Quick Reference Card with each delivered system d) Batteries e) Daylight/Lens Cover with lanyard f) Lens Cleaning Kit g) Soft Carrying Case h) Interface Cable(s) (Video, Power, Remote Control)		Meets Requirement
<b>Mounting Bracket (3.3.1)</b>	NSWC Crane	The Sight shall include an adjustable locking throw lever mounting system to allow for single hand operation and attachment/mounting on MIL-STD-1913 rails using no tools. The Mounting Bracket shall be designed to reduce potential snag hazards in the field and shall not damage the weapon rail. (T) The sight should allow the mount base to be adjusted (i.e. spacers) to ensure proper alignment with dayscopes outside the 1.5" height above rail requirement (O).		Meets Requirement

Technical Parameter (Performance Specification Para)	Testing Agency	Technical Requirement	Testing Data	Testing Results (Pass/Fail)
<b>Daylight/Lens Cover (3.3.2)</b>	NSWC Crane	A daylight/lens cover shall be provided for protection of the objective lens in the daytime. It shall remain attached to the Sight and in closed position when not in use. It shall remain locked in the open position during live fire operations and shall not close due to recoil shock or overpressure from the weapon (T). The daylight/lens cover shall provide impact protection, e.g. drop protection for the objective lens housing (O).		Meets Requirement
<b>Coupling Device (3.3.3)</b>	NSWC Crane	The Sight shall include a soft coupling device to block light leakage and dust intrusion at the interface between the dayscope objective lens and in line clip-on sight configuration for 40mm, 50mm, and 56mm dayscope objective lenses.		Meets Requirement
<b>Lens Cleaning Kit (3.3.4)</b>	NSWC Crane	The lens cleaning kit shall consist of at least a lens cleaning paper booklet, soft bristle brush and shall fit within the soft carrying case.		Meets Requirement
<b>Soft Carrying Case (3.3.5)</b>	NSWC Crane	The Sight shall have a padded soft carrying case that provides space and protection for the components listed in paragraph 3.2. The case shall be made of nylon with closed cell foam padding. It shall also have attachments for web belt and pack mounting and a FASTEX style clip (T).		Meets Requirement
<b>Surfaces (3.3.6)</b>	NSW OT&E	External surfaces (except for light transmitting elements) shall be finished in a neutral flat color that is non-reflective and corrosion resistant. The external lens and eyepiece shall not be obscured by condensation. The Sight shall have corrosion resistant and scratch resistant coatings on all exposed optics, which permit operation in salt sprays and blowing sand. All internal surfaces (except light transmitting elements) that are exposed to light from external and internal sources shall be finished to achieve the lowest feasible light reflectance (T).		Meets Requirement

Technical Parameter (Performance Specification Para)	Testing Agency	Technical Requirement	Testing Data	Testing Results (Pass/Fail)
<b>Adjustments and Controls (3.3.7)</b>	NSWC Crane  NSW OT&E	All controls shall be located on the Sight. These controls shall include power-on/off, auto/manual gain, polarity, non-uniformity correction, and focus. The controls shall permit fingertip control throughout the range of the operational environment and shall be operable by either hand and shall not cause the operator to lose visibility of the sight picture while adjusting. The design shall reflect the need for operation by soldiers wearing cold weather and/or level IV Mission Oriented Protective Posture (MOPP) clothing. Controls shall maintain position throughout system use in the operational environment. The sight shall have a focus knob to control system focus from near focus to past infinity, which shall be visibly noted by a defocused image. Sufficient tension shall exist to prevent accidental movement of the focus knob. Controls and adjustments shall include a simple and intuitive operator control and adjustment schema (T).		Meets Requirement
<b>Switches (3.3.8)</b>	NSWC Crane  NSW OT&E	The INOD switches shall be recessed and/or protected from inadvertent operations and damage. Controls shall exhibit tactile geometries that allow the operator to feel and discriminate between different switches in the dark. (Reference 3.1.3.6)		Meets Threshold – DT  Meets Threshold with Exception – OT&E
<b>Compass/Rangefinder (3.3.9)</b>	NSWC Crane	The INOD will include an integrated compass to provide the user with heading information with accuracy no more than (b)(3) (b)(3) The INOD shall include an integrated eye-safe laser rangefinder capable of ranging a (b)(3)	Heading Information $\leq$ (b)(3)	Meets Threshold

Technical Parameter (Performance Specification Para)	Testing Agency	Technical Requirement	Testing Data	Testing Results (Pass/Fail)
<b>Input/Output Interface (3.3.10)</b>	NSWC Crane  NSW OT&E	The INOD shall have the ability to interface to external power sources, remote controls, and output video to external devices (T). The INOD shall have an interface to accept Laser Rangefinder and other sniper related data inputs (O).		Meets Threshold – DT and OT&E
<b>Enemy Combatant Classification (3.4.1.1)</b>	NSW OT&E	The INOD shall allow the SOF Sniper to detect and distinguish the following at ranges out to (b)(3)		Meets Threshold
<b>Environmental Observations (3.4.1.2)</b>	NSW OT&E	The INOD shall be able to determine wind speed and direction under all lighting conditions at ranges of (b)(3)		Meets Threshold
<b>Bullet Trace Observation (3.4.1.3)</b>	NSWC Crane  NSW OT&E	The INOD shall allow SOF Snipers to observe bullet trace out to (b)(3)	Government witness of DRS Testing out to 1,000 meters.	Meets Requirement
<b>Start-Up Time (3.4.2.1)</b>	NSWC Crane	The INOD, at an ambient temperature of 23°C (± 2°C), shall have an initial power-up time less than or equal to (b)(3)	Initial Start- Up: 2 hours 40 minutes  Standby Start- Up: 1 second	Initial Start- Up: Meets Threshold  Standby Start-Up: Meets Objective

Technical Parameter (Performance Specification Para)	Testing Agency	Technical Requirement	Testing Data	Testing Results (Pass/Fail)
<b>Operating Time (3.4.2.2)</b>	NSWC Crane	The INOD-BLOCK III shall have an internal battery compartment that will house the primary batteries and enable continuous operation of the system in normal operating mode for a minimum of (b)(3). The system shall be capable of being powered externally by a BA5590 battery (T). To extend the operational life, (b)(3) s allowed in order to meet the Threshold and/or Objective requirements. (b)(3)	S/N: 000103: 9 hours 51 minutes S/N: 000107: > 10 hours	Meets Threshold
<b>Batteries (3.4.2.3)</b>	NSWC Crane	The INOD shall use standard, commercial batteries including but not limited to, "AA," "AA Lithium" or "CR123" (T) or both CR123 and "AA" batteries (O). The batteries shall be easily replaced/installed in the field by the operator with one hand, without using tools, and without removing the sight from the weapon. The Sight shall have battery polarity indicators and reverse polarity protection (T) or be capable of operating regardless of the battery orientation (O).	Lithium CR- 123	Meets Threshold
<b>Other Battery/Power Features (3.4.2.4)</b>	NSWC Crane	The On/Off switch shall be labeled and contain positive verification of the ON and OFF locations (T) and also have a power save mode (O). The Sight shall have the ability to run from an external power source. The battery lid shall be connected to the body of the sight to prevent loss. The Sight shall contain a visible low battery indicator within the system field of view (T).		Meets Objective
<b>Security (3.4.3)</b>	NSW OT&E	The INOD, while fully operating, shall not emit noise or light that is detectable by the human ear/eye or a GEN II/III night vision device in any direction at a distance beyond (b)(3). A detachable lens hood or similar glare reduction device shall be included (T).		Meets Requirement



Technical Parameter (Performance Specification Para)	Testing Agency	Technical Requirement	Testing Data	Testing Results (Pass/Fail)
<b>Dayscope Interoperability (3.4.4)</b>	NSWC Crane  NSW OT&E	The INOD shall be optimized for use with SOF Sniper Dayscopes set at 15X magnification (T), or optimized for use with Dayscopes ranging from 5X to 25X variable magnification (O). Representative Dayscopes include but are not limited to the Schmidt and Bender 5-25x56mm PMII, the Nightforce 3.5-15x50mm, the Nightforce 5.5-22x56mm, and the Leupold 6-20x50mm.		Meets Threshold – DT  Meets Requirement with Exception – OT&E
<b>Accuracy (3.4.5)</b>	NSWC Crane  NSW OT&E	The Sight shall allow a trained sniper to maintain his current level of accuracy (T), and deliver precise fire within (b)(3) (O). Any Sight placed on the weapon shall not degrade the shooters current level of accuracy. If a weapon is good to within 1 MOA accuracy, then even with all other factors, environment, shooter, ammo, etc., taken into account, the shooter shall be able to maintain that level of accuracy or whatever accuracy he can attain with his current scope.	NSWC Crane Boresight Image Alignment < (b)(3) Refer to Table 3 thru Table 6	Meets Threshold – DT and OT&E
<b>Repeatability (3.4.6)</b>	NSWC Crane  NSW OT&E	The Sight shall not lose more than (b)(3) of accuracy when repeatedly dismounted from the weapon and remounted (T) or shall have no loss of zero when remounted (O).	Refer to Table 7 thru Table 14	Meets Threshold – DT and OT&E
<b>Waterproof/Immersion (3.4.7)</b>	NSWC Crane	The Sight shall be waterproof down to (b)(3) without a waterproof bag (T). The Sight shall be waterproof and pressure resistant down to (b)(3) without a waterproof bag (O).		Meets Threshold
<b>Atmospheric Pressure (3.4.8)</b>	NSWC Crane	The INOD shall be transportable and function effectively without degradation at altitudes up to (b)(3) above sea level (T).		Meets Requirement
<b>Climatic Design (3.4.9)</b>	NSWC Crane	The Sight shall be able to operate at temperatures between (b)(3) and withstand storage and transit at temperatures ranging from (b)(3)		Meets Requirement

Technical Parameter (Performance Specification Para)	Testing Agency	Technical Requirement	Testing Data	Testing Results (Pass/Fail)
<b>Salt Fog (3.4.10)</b>	NSWC Crane	All external surfaces shall be rust and salt water corrosion resistant (T) when subjected to a 5% saltwater solution for 48 hours followed by a 48-hour drying period.		Meets Requirement
<b>Mobility and Transportability (3.4.11)</b>	NSWC Crane	The Sight shall not be damaged by most military methods of transport/infiltration to include HMMWV, cargo aircraft, helicopters, static line airborne operations, Fast Boats, and Submersible Diving Vehicles (SDVs) (T).		Meets Requirement
<b>Compatibility (3.4.12)</b>	NSW OT&E	The cheekweld, sight picture, and eye relief shall not change with use of the INOD by the operator while wearing various uniforms, equipment, and possibly eyeglasses appropriate for each individual mission. The shooting position shall be the same as current fielded rifles.		Meets Requirement
<b>Reliability (3.4.13)</b>	NSW OT&E	The Sight shall have a 90% probability of operating 36 hours on a 3-day mission without failure (T). The Sight shall have a 90% probability of operating 48 hours on a 4-day mission (O). The Sight shall be tested (and required to survive) in typical operational scenarios to include boat transit and airborne (free fall and static line) operations in a soft case (on weapon or individually).		Meets Threshold with one (1) Exception
<b>Survivability and Detectability (3.4.14)</b>	NSWC Crane	The Sight shall have the ability to attach removable laser protection and optical detection countermeasures (O).		Does not Meet Objective
<b>Blemishes and Image Defects (3.4.15)</b>	NSWC Crane	The central viewing areas of the Sight when viewed through a 15x dayscope, shall have no more than two (2) blemishes, image defects, or dead pixels that subtend 0.2 milliradian or greater within the central to upper viewing area (0.5 degrees of the central upper scene). The Sight shall have no blemishes, image defects, or dead pixels that subtend 0.2 milliradian or greater within the central lower viewing area (0.5 degrees of the central lower scene).		Meets Requirement

Technical Parameter (Performance Specification Para)	Testing Agency	Technical Requirement	Testing Data	Testing Results (Pass/Fail)						
Weapons Shock (3.4.16)	NSWC Crane  NSW OT&E	The Sight in its operational configuration, shall not be damaged nor exhibit any degradation in performance from muzzle flash and/or recoil shock when subjected to five groups of five rounds each on the .50 caliber sniper rifles (MK15 and M107), the .300 WinMag caliber MK13, MK20, and the PSR (Model TBD). The Sight in its operational configuration, shall not be damaged nor exhibit any degradation in performance when subjected to 300 rounds of equivalent shock from any of the host weapons listed in 3.4.17. Equivalent shock is equal to an average peak acceleration height of (b)(3)	Refer to Table 15 thru Table 18: DT/OT&E and Follow-On OT&E/DT Weapons Shock Data	Meets Threshold – DT and OT&E						
Host Weapon Mounting (3.4.17)	NSWC Crane	The INOD-BLOCK III shall mount to and align to standard rail systems (e.g. MIL-STD1913 i.e. Picatinny Rail) and be compatible with the MK13, MK15, MK20, M110, M2010, M24, M107, PSR (Model TBD) and other sniper rifles and rounds commonly used by SOF.		Meets Requirement						
Electromagnetic Interference (3.4.18)	NSWC Crane	<div>The INOD performance shall not be affected by electromagnetic emissions from battlefield electronic devices operating within (b)(3) f the system, nor experience performance degradation when subjected to the electric fields outlined in Table 1. Per MIL-STD-461F, all referenced field strengths are measured at the device under test.</div> <table><tr><td>Frequency</td><td>RMS Field</td><td>Polarity</td></tr><tr><td>Range (MHz)</td><td>Strength (V/M)</td><td></td></tr></table> <div>(b)(3)</div>	Frequency	RMS Field	Polarity	Range (MHz)	Strength (V/M)			Meets Requirement
Frequency	RMS Field	Polarity								
Range (MHz)	Strength (V/M)									
Workmanship (3.5)	NSWC Crane	The INOD optical components shall not contain foreign matter—such as dust, dirt, fingerprints, or moisture—that can be detected by visual examination. Joints and seams shall be a tight fit, and electrical wiring shall be secure and without unbroken insulation. All assemblies shall be free from cracks, splits, cold flow, shrinkage, inclusions, porosity, or any similar characteristics. Threads shall be full and undamaged for the entire length or depth. All moving parts shall be examined to insure that they move freely throughout their entire range without sticking, binding, or creeping.		Meets Requirement						

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## **APPENDIX B: HAZARD ANALYSIS**

**Table B-1: Hazard Analysis Table Key and Form**

HAZARD ANALYSIS TABLES					
Mishap Severity Categories					
Category	Description	Safety, Health, and Environmental Result Criteria			
I	Catastrophic	Could result in death, permanent total disability, loss of or damage to facility or mission critical assets for period exceeding one year, or irreversible environmental damage that violates law or regulation.			
II	Critical	Could result in permanent partial disability, injuries or occupational illness that may result in hospitalization of at least three personnel, loss of or damage to facility or mission critical assets exceeding six months but less than one year, or reversible environmental damage causing a violation of law or regulation.			
III	Marginal	Could result in injury or occupational illness resulting in one or more lost work days, loss of or damage to facility or mission critical assets exceeding two months but less than six months, release or spill of material necessitating immediate clean-up, or mitigatable environmental damage without violation of law or regulation where restoration activities can be accomplished.			
IV	Negligible	Could result in injury or illness not resulting in a lost workday, minimal damage to facility or mission critical assets repairable in less than two months, or minimal environmental damage not violating law or regulation.			
MISHAP PROBABILITY LEVELS					
Level	Description	Specific Individual Process			
A	Frequent	Likely to occur frequently during the life of the process.			
B	Probable	Likely to occur several times during the life of the process.			
C	Occasional	Likely to occur sometime during the life of the process			
D	Remote	Unlikely but possible to occur during the life of the process.			
E	Improbable	So unlikely, it can be assumed occurrence may not be experienced during the life of the process			
MISHAP RISK ACCESSIONMENT					
Mishap Probability Level		Mishap Severity Level			
		I CATASTROPHIC	II CRITICAL	III MARGINAL	IV NEGLIGIBLE
A-Frequent		HIGH	HIGH	SERIOUS	MEDIUM
B-Probable		HIGH	HIGH	SERIOUS	MEDIUM
C-Occasional		HIGH	SERIOUS	MEDIUM	LOW
D-Remote		SERIOUS	MEDIUM	MEDIUM	LOW
E-Improbable		MEDIUM	MEDIUM	MEDIUM	LOW
MISHAP RISK ACCEPTANCE LEVEL					
MISHAP RISK CATEGORY			MISHAP RISK ACCEPTANCE LEVEL		
High			Commander		
Serious			Department Head		
Medium			Division Head		
Low			Branch Head		

**Table B-2: Operational Hazard Analysis**

<b>OPERATIONAL HAZARD ANALYSIS</b> <b>PROCEDURE NUMBER: TR/14/JXQR/127</b> <b>PROCEDURE TITLE: TEST REPORT FOR IMPROVED NIGHT/DAY FIRE CONTROL/OBSERVATION DEVICE</b> <b>(INOD) – BLOCK III</b>						
PROCESS STEP OR NUMBER	HAZARDOUS ACTION OR CONDITION	MISHAP TRIGGERING EVENT	POTENTIAL MISHAP RESULT (MOST REASONABLY CREDIBLE)	INITIAL RISK INDEX	HAZARD MITIGATION REQUIREMENTS	FINAL RISK INDEX
5.2	Lithium and alkaline batteries can leak, discharge, explode, and cause fire.	Damaged Batteries	Eye injury or serious skin burns.	IVD	Check batteries for bulging. If bulges are found, do not use. Do not dispose in fire, expose to open flame, or short circuit. Place batteries in marked containers for recycling IAW Command environmental protection office battery recycling program.	IVE
5.2	Lithium and alkaline batteries can leak, discharge, explode, and cause fire.	Damaged Batteries	Damage to UUT/equipment.	IVD	Check batteries for bulging. If bulges are found, do not use. Do not dispose in fire, expose to open flame, or short circuit. Place batteries in marked containers for recycling IAW Command environmental protection office battery recycling program.	IVE